

What is claimed:

1. A method for processing PET polymers into pellets, which comprises:

extruding strands of PET polymer through a die plate into an underwater pelletizer;

cutting the PET polymer strands into pellets in said pelletizer;

transporting said PET pellets out of said pelletizer to a dryer using a water stream, and injecting a high velocity gas into said water stream to enhance the speed of the pellets to said dryer and with said pellets retaining sufficient heat inside said pellets to initiate and complete crystallization of said pellets.

2. The method as claimed in claim 1 wherein said PET pellets exiting said dryer are placed in a heat insulating container to complete said crystallization.

3. The method as claimed in claim 1 wherein said PET pellets exit said dryer at a mean temperature above about 135°C.

4. The method as claimed in claim 3 wherein said PET pellets exit said dryer at a temperature above about 145°C.

5. The method as claimed in claim 1 wherein said step of transporting said PET pellets out of said pelletizer to a dryer includes a substantially straight slurry line angled upwardly from the vertical between 30° and 60°.

6. The method as claimed in claim 5 wherein said angle is about 45°.

7. The method as claimed in claim 1 wherein said pressurized gas is air.

8. The method as claimed in claim 1 wherein said pressurized gas is injected into said water stream substantially in alignment with said water stream.

9. An apparatus for processing PET polymers into pellets which comprises an underwater pelletizer to cut PET polymer stands extruded into said pelletizer into pellets, piping to introduce water into said pelletizer and a slurry line to transport a water and pellet slurry out of said pelletizer and to a centrifugal dryer for drying said PET pellets, and a gas injector to introduce high velocity inert gas into said water and pellet slurry to enhance the speed of said pellets through said processing apparatus with said pellets exiting said dryer with sufficient internal heat to initiate and complete crystallization of said pellets.

10. The apparatus as claimed in claim 9 wherein said apparatus further comprises one or more heat insulating containers for receiving said pellets out of said dryer for completing crystallization of said pellets.

11. The apparatus as claimed in claim 1 wherein a portion of said slurry line is straight and angled upwardly at an angle between 30° and 60°.

12. The apparatus as claimed in claim 1 wherein said slurry line includes a straight portion and said gas injector introduces said inert gas at a beginning of said straight portion.

13. The apparatus as claimed in claim 12 wherein said gas injector introduces said inert gas into said water and pellet slurry substantially in alignment with a longitudinal axis of said slurry line straight portion.

14. The apparatus as claimed in claim 9 wherein said slurry line includes an exit end with an enlarged diameter before entry into said centrifugal dryer.

15. The apparatus as claimed in claim 9 wherein said slurry line includes a generally vertical section from said pelletizer, a generally angled straight section from said generally vertical section, and an enlarged section at an outer end of said generally angled straight section to reduce potential agglomeration of said pellets entering said dryer.

16. A method for processing high temperature crystallizing polymeric materials into pellets, which comprises:

extruding a high temperature crystallizing polymeric material into strands;

water cooling and cutting the extruded strands into pellets; and

transporting said pellets using a water stream and a high velocity gas with said pellets retaining sufficient heat to initiate and complete crystallization of said polymeric material without the application of external heat.

17. The method of claim 16, wherein said material includes PET polymer.